CURRICULUM VITAE

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PERSONAL STATISTICS

Birth date: July 11, 1954

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EDUCATION AND PROFESSIONAL POSITIONS HELD

1997-Present	Various positions held, including: Founder, President, Chief Scientific Officer, Chief Executive Officer, Director, Arriva Pharmaceuticals, Inc.
1992-1996	Founder, Executive Vice President, Research and Development, LXR Biotechnology Inc., subsequently purchased by Tanox, Inc.
1986-1992	Director, Molecular Biology, Chiron Corporation
1986-Present	Associate Adjunct Professor of Chemistry and Pharmaceutical Chemistry, University of California, San Francisco.
1983-1986	Senior Scientist, Chiron Corporation
1982-1983	Scientist, Chiron Corporation
1980-1982	Postdoctoral Fellow, Department of Biochemistry & Biophysics and Department of Pharmaceutical Chemistry, University of California, San Francisco.
1978-1980	Izaak Walton Killam Memorial Postdoctoral Scholar, University of Alberta, Edmonton, Alberta, Canada.
1975-1978	Ph.D., "The synthesis and biological activity of some new nucleoside analogues", University of Birmingham, Birmingham, England.
1972-1975	B.Sc. (Hons), in Chemistry, University of Birmingham, Birmingham, England.

PUBLICATIONS

1. Barr, P.J., Jones, A.S., and Walker, R.T. (1976). Incorporation of 5-substituted uracil derivatives into nucleic acids. Part IV. The synthesis of 5-ethynyluracil. Nucl. Acids. Res. *3,* 2845 -2849.

2. Barr, P.J., De Clercq, E., Hamor, T.A., Jones, A.S., Serafinowski, P., and Walker, R.T. (1978). Synthesis, structure and biological properties of some 5-substituted pyrimidine deoxynucleosides. Bull. Czech. and Slovak Biochem Soc. *6,* 23.

3. Barr, P.J., Hamor, T.A., and Walker, R.T. (1978). Antiviral nucleic acid derivatives. III. Crystal structure of 5-ethynyl-2'-deoxyuridine. Acta. Cryst. *B34,* 2799.

4. Barr, P.J., Jones, A.S., Serafinowski, P., and Walker, R.T. (1978). The synthesis of nucleosides derived from 5-ethynyluracil and 5-ethynylcytosine. J. Chem. Soc. Perkin Trans. *I.,* 1263.

5. Walker, R.T., Barr, P.J., De Clercq, E., Descamps, J., Jones, A.S., and Serafinowski, P. (1978). The synthesis and properties of some antiviral nucleosides. Nucl. Acids. Res. Special Pub. *4,* s103.

6. Barr, P.J., Bohacek, L., Jones, A.S., and Walker, R.T. (1979). The synthesis of some tritiated 5-substituted uracil derivatives. J. Labelled Compounds and Radiopharmaceuticals *16,* 909.

7. De Clercq, E., Descamps, J., Barr, P.J., Jones, A.S., Serafinowski, P., Walker, R.T., Huang, G.F., Torrence, P. F., Schmidt, C.L., Mertes, M.P., Kulikowski, T., and Shugar, D. (1979). Comparative study of the potency and selectivity of anti-herpes compounds. In Antimetabolites in Biochemistry, Biology and Medicine, J. Skoda, P. Langen, eds. (Pergamon Press), p. 275 - 285.

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9. De Clercq, E., Descamps, J., De Somer, P., Barr, P.J., Jones, A.S., and Walker, R.T. (1979). Pharmacokinetics of E-5-(2-bromovinyl)-2'-deoxyuridine in mice. Antimicrob. Agents and Chemother. *16,* 234 -236.

10. Descamps, J., De Clercq, E., Barr, P.J., Jones, A.S., Walker, R.T., Torrence, P.F., and Shugar, D. (1979). Relative potencies of different anti-herpes agents in the topical treatment of cutaneous herpes simplex virus infection of athymic nude mice. Antimicrob. Agents and Chemother. *16,* 680 - 682.

11. Barr, P.J., Chananont, P., Hamor, T.A., Jones, A.S., O'Leary, M.K., and Walker, R.T. (1980). The synthesis and crystal structure of 5-acetyl-2'-deoxyuridine. Tetrahedron *36,* 1269.

12. Barr, P.J., Jones, A.S., Verhelst, G., and Walker, R.T. (1981). Synthesis of some 5-halogenovinyl derivatives of uracil and their conversion into 2'-deoxyribonucleosides. J. Chem. Soc. Perkin Trans. *I.*, 1665.

13. Barr, P.J., Nolan, P.A., Santi, D. V., and Robins, M.J. (1981). Inhibition of thymidylate synthetase by 5-alkynyl-2'-deoxyuridylates. J. Med. Chem. *24,* 1385 -1388.

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16. Balzarini, J., De Clercq, E., Torrence, P. F., Mertes, M. P., Park, J. S., Schmidt, C. L., Shugar, D., Barr, P.J., Jones, A.S., Verhelst, G., and Walker, R.T. (1982). Role of thymidine kinase in the inhibitory activity of 5-substituted 2'-deoxyuridines on the growth of human and murine tumor cell lines. Biochem. Pharmacol. *31,* 1089 - 1095.

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23. Robins, M.J., and Barr, P.J. (1983). Nucleic acid related compounds. 39. Efficient conversion of 5-iodo to 5-alkynyl and derived 5-substituted uracil bases and nucleosides. J. Org. Chem. *48,* 1854 - 1862.

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PATENTS AND PATENT FAMILIES (Issued or Pending)

- *E*-5-(Halovinyl)-2'-deoxyuridines with antiviral action.
- Gene for human epidermal growth factor and synthesis and expression thereof.
- Hybrid DNA synthesis of mature growth hormone releasing factor.
- Hybrid DNA synthesis of mature insulin-like growth factors.
- Methods and compositions for producing interleukin-2.
- Active site modified protease alpha-1-antitrypsin inhibitors.
- Recombinant HIV proteins.
- Plasmodium circumsporozoite protein analogs lacking repeat sequences.
- *In vivo* processing of yeast ubiquitin fusion proteins: Production of heterologous polypeptides in *Saccharomyces cerevisiae*.
- Expression and processing of authentic FGF's in yeast.
- Expression of PACE in microorganisms.
- Expression of PACE in host cells and methods of use thereof.
- Compositions and methods for PACE4 and 4.1 genes in cells.
- Expression of malaria polypeptides.
- Pfs25 protein derivatives and expression thereof.
- Porphyromonas gingivalis proteinase.
- Lysine-specific Porphyromonas gingivalis proteinase.
- A novel family of pollen proteinases and methods of use thereof.
- Compositions which inhibit apoptosis, methods of purifying the compositions and uses thereof.
- Novel Fas protein and methods of use thereof.
- Novel apoptosis-modulating proteins, DNA encoding the proteins and methods of use thereof.

- Ubiquitin expression system.
- Apoptosis-modulating proteins, DNA encoding the proteins and methods of use thereof.
- Production of polyketides in bacteria and yeast.
- Multifunctional protease inhibitors and their use in treatment of disease.
- Methods of protein production in yeast.
- Composition and method for treating inflammatory diseases using protease inhibitors.
- Dry recombinant human alpha 1-antitrypsin.
- Alpha 1-antitrypsin compositions and treatment methods using such compositions.
- Treatment of COPD by low dose inhalation of protease inhibitor.
- Methods and compositions for treatment of otitis media.

GRANTS

- Co-investigator, SBIR grant, USPHA, 1-R43-A1/CA-22778-01, entitled "Genetic Engineering Approaches for AIDS Vaccines" with Drs. P.A. Luciw and K.S. Steimer, 8/1/85.
- Principal Investigator, SBIR grant, USPHA, 1-R43-AI23562-01 entitled "Genetic Engineering Approaches for Malaria Vaccines", 3/1/86.
- Co-investigator, DHHS-PHS IRO1 AI23972-01, entitled "Studies of AIDS Retrovirus Reverse Transcriptase" with Drs. D.V. Santi and P.A. Luciw, 8/1/87.

ABSTRACTS FROM INTERNATIONAL MEETINGS

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76. Barr, P.J., Green, K. M., Gibson, H.L., Bathurst, I.C., Quakyi, I. A., and Kaslow, D. C. (1991). Cold Spring Harbor Symposium on Modern Approaches to New Vaccines Including Prevention of AIDS. New York.

77. Ishihara, M., Tyrrell, D. J., Kiefer, M. C., Barr, P.J., and Stack, R. J. (1991). Fractionation of heparin-derived oligosaccharides on affinity columns of immobilized basic fibroblast growth factor (bFGF). American Society for Cell Biology, Boston, Massachusetts.

78. Ishihara, M., Kiefer, M. C., Barr, P.J., Guo, Y., and Swiedler, S. J. (1992). COS cell mutants defective in biosynthesis of heparan sulfate proteoglycan (HSPG). UCLA Symposium, Glycobiology II. Park City, Utah.

79. Barr, P.J., Smeekens, S. P., Tucker, J. E., Landsberg, K. E., Joh, R., and Kiefer, M. C. (1992). Mammalian subtilases: The long-sought dibasic processing endoproteases. American Chemical Society, San Francisco.

80. Kiefer, M. C., Joh, R.S., Green, K. M., Schmid, C., Barr, P.J., and Zapf, J. (1992). Characterization of recombinant insulin-like growth factor binding proteins-4, -5 and -6 produced in yeast. American Chemical Society, San Francisco, California.

81. Kiefer, M. C., Schmid, C., Waldvogel, M., Schlapfer, I., Futo, E., Green, K., Joh, R., Barr, P.J., and Zapf, J. (1992). Characterization of recombinant insulin-like growth factor binding proteins-4, -5 and -6 produced in yeast. 2nd International Workshop on IGF Binding Proteins, Opio, France.

82. Tume, C. B., Sun, E., Lando, G., Bathurst, I., Barr, P.J., McKerrow, J. H., and Ngu, J. L. (1992). Selective screening and cloning of antigens of *Onchocerca volvulus* larvae.

UCLA Symposium, Molecular and Cellular Biology of Host-Parasite Interactions, Park City, Utah.

83. Barr, P.J. (1992). Applications of yeast genetic engineering in human medicine. Eighth International Symposium on Yeasts, Atlanta, Georgia (invited speaker).

84. Moyer, D. L., Lee, H., Barr, P.J., Brake, A. J., Merryweather, J.P., Cousens, L.S., and Shuster, J. R. (1992). Recent Advances in Genetic Engineering. Eighth International Symposium on Yeasts, Atlanta, Georgia.

85. Bathurst, I.C., Barr, P.J., Kaslow, D. C., Lewis, D. H., Atkins, T. J., and Rickey, M. E. (1992). Development of a single injection transmission-blocking malaria vaccine using biodegradable microspheres. Proceed. Intern. Symp. Control. Rel. Bioact. Mater., *19*, Controlled Release Society, Orlando, Florida.

86. Bathurst, I.C., Barr, P.J., Keister, D. B., Richey, M. E., Atkins, T. J., Lewis, D. H., and Kaslow, D. C. (1992). A single injection transmission-blocking malaria vaccine. American Society of Tropical Medicine and Hygiene, Seattle, Washington.

87. Barr, P.J. (1992). Heterologous gene expression in yeast: a view from industry. American College of Veterinary Microbiologists Workshop on Protein Expression: Methodology and Applications in Veterinary Infectious Disease Research. Chicago, Illinois (invited speaker).

88. Barr, P.J., Kiefer, M. C., Pavloff, N., Shapiro, J.P., Brauer, M.J., Umansky, S.R., and Tomei, L. D. (1993). Apoptosis and cellular aging: molecular approaches to the treatment of diseases of aging. Paris Conference on Apoptosis in AIDS and Cancer, Paris, France.

89. Barr, P.J., Cope, F.O., and Tomei, L.D. (1993). The genetics of apoptosis, and its role in the aging process. Seventeenth International Congress of Genetics, Birmingham, England (invited speaker).

90. Gunasekeran, S., Bathurst, I.C., Constantz, B. R., Quiaoit, J., Barr, P.J., and Gospodarowicz, D. (1993). Mineralized collagen with bone morphogenic protein as a substitute for autograft bone. 39th Annual Meeting, Orthopaedic Research Society, San Francisco, California.

91. Pavloff, N., Kiefer, M. C., Shapiro, J.P., Brauer, M.J., Gibson, H.L., Fitzpatrick, P.A., Pemberton, P.A., Prochazka, V., Shekhtman, E. M., Umansky, S.R., Tomei, L. D., and Barr, P.J. (1993). A novel human Fas antigen lacking the transmembrane region: Fas□TM. Paris Conference on Apoptosis in AIDS and Cancer, Paris, France.

92. Tomei, L. D., Umansky, S.R., Bathurst, I.C., and Barr, P.J. (1993). Therapeutic intervention and apoptosis. Paris Conference on Apoptosis in AIDS and Cancer, Paris, France.

93. Barr, P.J. (1994a). Naturally occurring proteins that are active modulators of apoptosis in the GI system: a search for the active components. Applications of Apoptosis. CHI Symposium, San Diego, California.

94. Barr, P.J. (1994b). Apoptosis: A major new target for pharmaceutical drug development. The 1994 Miami Bio/Technology Winter Symposium, Advances in Gene Technology: Molecular Biology and Human Disease. Fort Lauderdale, Florida.

95. Barr, P.J. (1994c). Apoptosis as a target for new pharmaceuticals. William Harvey Research Conference on Genes and Disease: Opportunities for New Therapies and Diagnostics, London, England (invited speaker).

96. Bathurst, I.C., Bradley, J. D., Goddard, J. G., Funk-Archuleta, M., Barr, P.J., and Tomei, L. D. (1994). Purification and characterization of an anti-apoptotic factor present in soy flour. American Society of Biochemistry and Molecular Biology Symposium on Genetic and Biochemical Approaches for Studying Cell Death, Lake Tahoe, California

97. Cheng, J., Zhou, T., Liu, C., Kiefer, M. C., Barr, P.J., and Mountz, J. D. (1994). SLE patients produce elevated serum levels of a secreted form of Fas protein by alternative splicing of the Fas apoptosis gene. ACR Meeting.

98. Cheng, J., Liu, C., Zhou, T., Kiefer, M. C., Barr, P.J., and Mountz, J. D. (1994). SLE patients produce elevated serum levels of a secreted form of Fas protein by alternative splicing of the Fas apoptosis gene. Annual Meeting of the American Society of Clinical Immunology.

99. Kiefer, M. C., Brauer, M.J., Powers, V. C., Prochazka, V., Shapiro, J.P., Umansky, S.R., Tomei, L. D., and Barr, P.J. (1994). *Cdn-1, -2,* and *-3* , a family of *bcl-2*-related genes that modulate apoptosis. American Society of Biochemistry and Molecular Biology Symposium on Genetic and Biochemical Approaches for Studying Cell Death, Lake Tahoe, California.

100. Pavloff, N., Pike, R., Prochazka, V., Kiefer, M. C., Potempa, J., Travis, J., and Barr, P.J. (1994). Molecular cloning, characterization and expression of a family of pathogenic proteases from *P. Gingivalis*. Seventh International Symposium on the Genetics of Industrial Microorganisms. Montreal, Canada.

101. Pinho, J. R. R., Cardi, B. A., Andrade Jr., H. F., Barr, P.J., Bathurst, I.C., and Schenberg, A. C. (1994). Inducao de imunidade humorl e celular em camundongos CBA/J por antigeno recombinante de 18KDa de *Mycobacterium leprae*, nativo ou submetido a irradiacao ionizante. XXX Congresso da Sociedade Brasiliera de Medicina Tropical. Salvador-Bahia, Brazil.

102. Umansky, S.R., Cuenco, G. M., Barr, P.J., and Tomei, L. D. (1994). Death of neonatal cardiomyocytes upon ischemia and reperfusion *in vitro*. American Society of Biochemistry and Molecular Biology Symposium on Genetic and Biochemical Approaches for Studying Cell Death, Lake Tahoe, California.

103. Barr, P.J. (1995a). Genes that modulate apoptosis in the heart. IBC Conference on Heart Failure. Philadelphia, Pennsylvania.

104. Barr, P.J. (1995b). Apoptosis as a target for therapeutic drug development. IBC Conference on Apoptosis: drug discovery strategies exploiting novel pathways and mechanisms. San Diego, California. (Member of Scientific Advisory Committee).

105. Krowka, J. F., Ascher, M. S., Sheppard, H. W., Kiefer, M. C., Bathurst, I., Tomei, L. D., and Barr, P.J. (1995). Inhibition of death of lymphocytes from HIV-infected patients by anti-apoptotic molecules including soluble CD95 (Fas□TM). The Second National Conference on Human Retroviruses and Related Infections, Washington, DC.

106. Umansky, S.R., Cuenco, G. M., Khutzian, S. S., Barr, P.J., and Tomei, L. D. (1995). Keystone Symposium on Cell Death, Keystone, Colorado.

107. Barr, P.J. (1996). Proteolysis during apoptosis. Keystone Symposium on Proteolytic Enzymes and Inhibitors in Biology and Medicine, Keystone, Colorado.

108. Pemberton, P.A., Pavloff, N., Chen, W-C. A., Wong, D. T., Shih, M., Ji, X-D., Sager, R., and Barr, P.J. (1996). Maspin is a widespread component of epithelial tissues. Proteases and Protease Inhibitors: AACR Special Conference, Panama City Beach, Florida.

109. Barr, P.J. (1997). Combinatorial biosynthesis of polyketides. IBC Conference on Natural Products Drug Discovery. San Diego, California.

110. Antonelli, P.J., Schultz, G.S., Sundin, D.J., Pemberton, P.A., and Barr, P.J. (2003). Protease inhibitors alpha 1-antitrypsin and ilomastat are not ototoxic in the chinchilla. Association for Research in Otolaryngology MidWinter Meeting, Daytona Beach, Florida.

111. Pemberton P.A., Cantwell, J.S., Kim, K.M., Gibson, H.L., Connolly, K.M., Sundin, D.J., Abraham, W.C., Tetley, T.D., Hansel, T.T. and Barr, P.J. (2003). Multifunctional Protease Inhibitors for the Treatment of Respiratory Disease. American Thoracic Society, 99th International Congress, Seattle, Washington.

112. Vanden Bon E.J., Tennant R.C., Hansel T.T., Barnes P.J., Barr P.J., Pemberton P.A., Sundin D.S., Tetley T.D. (2003). Effect of Ilomastat and SLAPI on matrix metalloproteinase (MMP)-9 and neutrophil elastase (NE) activity in induced sputum from smokers. American Thoracic Society, 99th International Congress, Seattle, Washington.

113. Antonelli, P.J., Schultz, G.S., Kim, K.M., Cantwell, J.S., Sundin, D.J., Pemberton, P.A., Barr, P.J. (2003). Inhibition of proteases with alpha 1-antitrypsin and ilomastat in human otitis media. 8th International Symposium on Recent Advances in Otitis Media, Ft. Lauderdale, Florida.

114. Coyte, P.C., Croxford, R., Frieberg, J., and Barr, P.J. (2003). Projected effects of protease inhibitor therapy on the cost of middle ear surgery in the United States. 8th International Symposium on Recent Advances in Otitis Media, Ft. Lauderdale, Florida.

115. Pemberton, P.A., Cantwell, J.S., Kim, K.M., Gibson, H.L., Connolly, K.M., Sundin, D.J., Abraham, W.C., Topping, J.R., Vanden Bon, E.J., Tennant, R.C., Hansel, T.T., Tetley,T.D., Barnes, P.J. and Barr, P.J. (2003). Multifunctional Protease Inhibitors for potential treatment of respiratory disease. 6th World Congress on Inflammation, Vancouver, Canada.

116. Barr, P.J., Antonelli, P.J., Schultz, G.S., Cantwell, J.S., Kim, K.M., Gibson, H.L., Connolly, K.M., Sundin, D.J., Pemberton, P.A. (2003). Multifunctional protease inhibitors as potential therapeutics for otitis media. 6th World Congress on Inflammation, Vancouver, Canada.

117. Antonelli, P.J., Schultz, G.S., Kim, K.M., Cantwell, J.S., Sundin, D.J., Pemberton, P.A., Barr, P.J. (2003). Inhibition of proteases with alpha 1-antitrypsin and ilomastat in human otitis media. AAO-HNS Foundation Annual Meeting, Orlando, Florida.

118. Pemberton, P.A., Cantwell, J.S., Kim, K.M., Sundin, D.J., Kobayashi, D., Fink, J., Shapiro, S.D., Barr P.J. (2003). An inhaled MMP inhibitor blocks cigarette-induced lung damage in the smoking mouse model. European Respiratory Society Annual Congress, Vienna, Austria.

119. Topping, J.R., Vanden Bon, E.J., Tennant, R.C., Hansel, T.T., Barnes, P.J., Barr, P.J., Pemberton, P.A., Sundin, D.J. Tetley, T.D. (2003). Effect of $\tilde{\alpha}_1$ antitrypsin (rAAT) and TAPI on neutrophil elastase (NE) and matrix metalloproteinase-9 (MMP-9) activity in induced sputum (IS) from healthy smokers and patients with chronic obstructive pulmonary disease (COPD). European Respiratory Society Annual Congress, Vienna, Austria.

120. Gratton, D., Cantwell, J., Pemberton, P., Barr, P., Barabe, J., and Sundin, D. (2004). A study of the safety and tolerability of recombinant human alpha 1-antitrypsin (rAAT) gel in subjects with atopic dermatitis. European Academy of Dermatology & Venereology, 13th Congress.

121. Antonelli, P., Schultz, G., Sundin, D., Pemberton, P. and Barr, P. (2004). Alpha-1-antitrypsin single dose adjuvant therapy for acute otitis media. American Academy of Otolaryngology-Head and Neck Surgery Annual Meeting, New York, NY, September 19-22.

122. Antonelli, P., Schultz, G., Cantwell, J., Sundin, D., Pemberton, P. and Barr, P. (2004). Inflammatory proteases in chronic otitis externa. American Academy of Otolaryngology-Head and Neck Surgery Annual Meeting, New York, NY, September 19-22.

123. Topping JR, Vanden Bon, EJ, Tennant, RC, Hansel, TT, Barnes, PJ, Barr, PJ, Pemberton, PA, Sundin, DJ and Tetley, TD. (2004). Inhibition of elastinolytic activity in induced sputum from COPD patients and healthy smokers by recombinant alpha 1-

antitrypsin (rAAT) and a fusion protein, TAPI. European Respiratory Society Annual Congress.

124. Pemberton PA, Cantwell JS, Wilk BJ, Henstrand, JM, Fink, J, Kobayashi D, Shapiro SD, and Barr PJ. (2004). Inhaled recombinant alpha 1-antitrypsin ameliorates cigarette-induced lung damage in the smoking mouse model. European Respiratory Society Annual Congress, Glasgow, Scotland.

125. Sundin DJ, Preston MS, Gibson HL, Pemberton PA, Barr PJ, Kunzler J, and Gelmont D. (2006). Alpha 1-antritrypsin produced at high levels in the yeast Saccharomyces cerevisiae: Human clinical trials for hereditary emphysema. BioProduction 2005, Amsterdam, October.

126. Thorley AJ, Tennant RC, Hansel TT, Barnes PJ, Barr PJ, Sundin DJ, Tetley TD. Thrombin and tryptase activity is elevated in induced sputum from asthmatic subjects compared to healthy smokers and COPD subjects and can be inhibited by recombinant α1-antitrypsin (rAAT) and a fusion protein of secretory leukoprotease inhibitor and α1-antitrypsin (SLAPI). Keystone Symposium on Allergic Inflammation, April 2006.

127. Thorley AJ, Tennant RC, Hansel TT, Barnes PJ, Barr PJ, Sundin DJ, Tetley TD. (2006). Neutrophil elastase levels and the effect of TAPI, SLAPI and recombinant α1-antitrypsin on elastinolytic activity of induced sputum from healthy smokers and COPD subjects. American Thoracic Society, San Diego, California.

BOOKS

- Yeast Genetic Engineering. P.J. Barr, A.J. Brake and P. Valenzuela Eds. Butterworths, New York (1989). Japanese Edition (1994).

COMMENTARIES AND BOOK REVIEWS

- Barr, P.J. (1994). Longevity by design. Biotechnology *12*, 1024.
- Barr P.J. (1995). Mammalian cell technology: Secretion on demand. Biotechnology *13*, 1158-1159.
- Barr, P.J. and Kiefer, M. C. (1995). Bak, the Bcl-2-homologous antagonist/killer, a critical modulator of apoptosis in human disease. Canadian Chemical News *47*, 22-23.
- Barr, P.J. (2002). Respiratory Disease: Significant Progress, But Major Challenges Still Lie Ahead. Health Care and Biotech, San Francisco Chamber of Commerce, 69-73.

INVITED LECTURES

- Department of Chemistry, University of Washington, Seattle, November (1981).
- Department of Pharmaceutical Chemistry, University of California San Francisco, November (1985).

- Department of Biochemistry, University of Georgia, Athens, March (1986)
- Upjohn Corporation, Kalamazoo, Michigan, March (1986).
- Gordon Conference on Enzymes, Co-enzymes and Metabolic Pathways, Meriden, New Hampshire, June (1986).
- Bay Area Yeast Group Meeting, University of California, Berkeley, November (1986).
- Biotech San Francisco, November (1986). Chairman of Pharmaceutical Session.
- California AIDS Task Force meeting on the Molecular Biology of AIDS, Asilomar, California, December (1986).
- Bio/Technology Conference on Production Systems, New York City, May (1987)
- ALKO Symposium on Yeast Biotechnology, Helsinki, Finland, June (1987).
- Biotech `87, Santa Clara, November (1987). Chairman of Recombinant Vaccine Session.
- Northern California Parasitology Group, San Jose, November (1987).
- 20th Anniversary Symposium of the Nucleotide Group, Molecular Recognition, Birmingham, England, December (1987).
- The Hollister-Stier's Distinguished Lecture Series in Advances in Immunology, Washington State University, Pullman, April (1988).
- Department of Anatomy and Physiology, University of California Berkeley, April (1988).
- Department of Biochemistry and Biophysics, University of California San Francisco, June (1988).
- Biotech USA, San Francisco, November (1988), Chairman of Infectious Disease Diagnosis Session.
- Distinguished Corporate Scientist Lecture Series, Center for Biotechnology, SUNY at Stony Brook, February (1989).
- Labsystems Symposium: Recombinant Systems in Protein Expression, Imatra, Finland, July (1989).
- Department of Veterinary Medicine, University of California, Davis, August (1989).
- University of Yaoundé, Cameroon, March (1990).
- Scripps Clinic and Research Foundation, La Jolla, October (1990).
- Biotechnology Program, University of California, Davis, April (1991).
- Department of Pharmaceutical Chemistry, University of California San Francisco, December (1991).
- American Chemical Society, San Francisco, April (1992). Chairman of Heterologous Gene Expression session.
- Biotecnología Habana '92, Havana, Cuba, June (1992).
- Gordon Conference on Proteinases and their Inhibitors, Holderness School, New Hampshire, June (1992).
- Oregon Health Sciences University, Portland, Oregon, June (1994).
- Pasteur Institute, Paris, France, December (1994).
- Selectide Corporation, Tucson, Arizona, March (1995).
- Abbott Biotech Symposium, October (1995).
- Department of Molecular Pharmacology, Stanford University, November (1995).
- Kosan Biosciences, Inc., Burlingame, California, May (1996).

- Alpha 1-Antitrypsin Deficiency Support Network of Arizona, September (1997).
- Alpha 1-Antitrypsin Deficiency Support Network of Northern California (Annually,1998 - 2007).
- Nucleic Acids Group Symposium, Queens College, Cambridge, April (2000).
- The Commonwealth Club of California, November (2002).
- Nucleic Acids Group Symposium, Queens College, Cambridge, September (2003).
- Chairman, SMi Symposium on Asthma and COPD, London, April (2005)